



S04-test Types of Data: Test Pack

EDEXCEL 1ST0 · Calculator allowed · about 35 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Data can be described as either qualitative or quantitative, depending on what is being recorded.

(a) Define what is meant by qualitative data. (1)

(b) Define what is meant by quantitative data. (1)

(c) A vet records information about 4 variables for every animal at a clinic. For each variable, write down whether it is qualitative or quantitative. (4)

Variable	Type (qualitative or quantitative)
Breed of animal	
Mass of animal (kg)	
Colour of coat	
Number of visits this year	

.....
(Total for Question 1 is 6 marks)

- 2** State whether this is True or False: Quantitative data is always numerical.

(Total for Question 2 is 1 mark)

3 For each variable, circle the word that correctly describes it.

(a) Number of pets owned by a family: (1)

- ☐ Qualitative
- ☐ Quantitative

(b) Favourite colour of paint: (1)

- ☐ Qualitative
- ☐ Quantitative

(c) Time taken to solve a puzzle, in seconds: (1)

- ☐ Discrete
- ☐ Continuous

(d) Number of goals scored in a match: (1)

- ☐ Discrete
- ☐ Continuous

(e) A student's own measurements taken during a science experiment: (1)

- ☐ Primary
- ☐ Secondary

(f) Rainfall figures taken from a government website: (1)

- ☐ Primary
- ☐ Secondary

(Total for Question 3 is 6 marks)

4 For each statement about types of data, write down whether it is True or False.

(i) Continuous data can only take whole-number values. (1)

.....
(ii) The number of pets a family owns is discrete data. (1)

.....
(iii) Secondary data is always less reliable than primary data. (1)

.....
(iv) Nominal data has categories that can be placed in a meaningful order. (1)

.....
(v) Bivariate data involves two variables recorded for each individual or item in a data set. (1)

.....
(Total for Question 4 is 5 marks)

5 A gardener records the exact, raw height, in cm, of each of 40 sunflowers individually.

(a) Define what is meant by grouped data. (1)

(b) Give one advantage and one disadvantage of grouping the gardener's raw height data into class intervals. (2)

(Total for Question 5 is 3 marks)

6 Complete the table below, classifying each variable in two ways.

(a)

Variable	Qualitative or quantitative	Discrete or continuous (or N/A)
Number of pets owned		
Time to complete a marathon (hours)		
Breed of dog		

(5)

(b) Explain why 'discrete or continuous' does not apply to the variable 'breed of dog'.

(1)

(Total for Question 6 is 6 marks)

7 A national charity is investigating the question: 'Has the average distance people commute to work changed over the last 10 years?' The charity obtains commuting-distance figures from a government transport survey published every year since 2005, rather than surveying commuters itself.

- (a)** State whether the government transport survey data used by the charity is primary or secondary data. Give a reason. (2)
- (b)** The variable 'commuting distance (km)' is quantitative. State, with a reason, whether it is discrete or continuous. (2)
- (c)** The charity also records the year of each survey alongside the average commuting distance for that year, so that a trend can be studied. Explain why this makes the data set bivariate. (2)
- (d)** Evaluate one limitation of using this secondary data set to answer the charity's question, and suggest how the charity could address it. (2)

(Total for Question 7 is 8 marks)

Mark scheme · S04-test Types of Data: Test Pack

Question 1

- (a) **B1** data that describes a quality/characteristic and is not numerical
- (a) **Answer: Qualitative data describes a quality or characteristic of something and is not numerical (for example colour or opinion).**
- (b) **B1** data that is numerical and can be counted or measured
- (b) **Answer: Quantitative data is numerical data that can be counted or measured (for example height or number of pets).**
- (c) **B1** Breed of animal: qualitative
- (c) **B1** Mass of animal (kg): quantitative
- (c) **B1** Colour of coat: qualitative
- (c) **B1** Number of visits this year: quantitative
- (c) **Answer: Breed of animal - qualitative; Mass of animal (kg) - quantitative; Colour of coat - qualitative; Number of visits this year - quantitative.**

Question 2

- **B1** True cao
- **Answer: True**

Question 3

- (a) **B1** Quantitative cao
- (a) **Answer: Quantitative**
- (b) **B1** Qualitative cao
- (b) **Answer: Qualitative**
- (c) **B1** Continuous cao
- (c) **Answer: Continuous**
- (d) **B1** Discrete cao
- (d) **Answer: Discrete**
- (e) **B1** Primary cao
- (e) **Answer: Primary**
- (f) **B1** Secondary cao
- (f) **Answer: Secondary**

Question 4

- (i) **B1** False cao
- (i) **Answer: False**
- (ii) **B1** True cao
- (ii) **Answer: True**
- (iii) **B1** False cao
- (iii) **Answer: False**
- (iv) **B1** False cao
- (iv) **Answer: False**
- (v) **B1** True cao
- (v) **Answer: True**

Question 5

- (a) **B1** data organised into class intervals, usually shown with a frequency for each interval, oe
- (a) **Answer: Grouped data is data organised into class intervals, usually shown with a frequency for each interval.**
- (b) **B1** advantage: e.g. easier to see the overall pattern of heights, or simpler to display in a table or chart, oe
- (b) **B1** disadvantage: e.g. the exact individual heights are lost, so an exact mean cannot be calculated, oe
- (b) **Answer: Advantage: it is easier to see the overall pattern and display the data simply. Disadvantage: the exact individual heights are lost, so an exact mean can no longer be found.**

Question 6

- (a) **B1** Number of pets owned: quantitative
- (a) **B1** Number of pets owned: discrete
- (a) **B1** Time to complete a marathon (hours): quantitative, continuous (both needed)
- (a) **B1** Breed of dog: qualitative
- (a) **B1** Breed of dog: N/A (not applicable) for discrete/continuous
- (a) **Answer: Number of pets owned - quantitative, discrete. Time to complete a marathon - quantitative, continuous. Breed of dog - qualitative, N/A.**
- (b) **B1** breed of dog is qualitative (categorical), not quantitative, and only quantitative data can be discrete or continuous oe
- (b) **Answer: Breed of dog is qualitative data, not quantitative, and the discrete/continuous classification only applies to quantitative data.**

Question 7

- (a) **B1** secondary
- (a) **B1** because the charity did not collect it directly itself - it was collected by the government for its own purposes and reused by the charity oe
- (a) **Answer: Secondary data, because the charity did not collect it directly itself - it was originally collected by the government and is being reused by the charity.**
- (b) **B1** continuous
- (b) **B1** because commuting distance can take any value (it is measured), not just fixed separate values oe
- (b) **Answer: Continuous, because commuting distance can take any value within a range, since it is measured rather than counted.**
- (c) **B1** two variables (year and average commuting distance) are recorded together, paired for each survey oe
- (c) **B1** so that the relationship between them, how distance changes over time, can be investigated oe
- (c) **Answer: Two variables, year and average commuting distance, are recorded together for each survey, so that the relationship between them (how distance has changed over time) can be investigated.**
- (d) **B1** limitation: e.g. the survey's definition of 'commuting distance' or its method of collection may have changed over the 10 years, making direct comparison unreliable oe
- (d) **B1** improvement: e.g. check that the survey's methodology has stayed consistent each year, or supplement it with the charity's own primary survey oe
- (d) **Answer: A limitation is that the survey's definition of 'commuting distance' or its collection method may have changed over the 10 years, making direct comparison unreliable. The charity could check the methodology has stayed consistent, or supplement the secondary data with its own primary survey.**